human CAP-1

60
MLSHNTMMKQRKQQATAIMKEVHGNDVDGMDLGKKVSIPRDIMLEELSHLSNRGARLFKM

120
RQRRSDKYTFENFQYQSRAQINHSIAMQNGKVDGSNLEGGSQQAPLTPPNTPDPRSPPNP

180
DNIAPGYSGPLKEIPPEKFNTTAVPKYYQSPWEQAISNDPELLEALYPKLFKPEGKAELP

240
DYRSFNRVATPFGGFEKASRMVKFKVPDFELLLLTDPRFMSFVNPLSGRRSFNRTPKGWI

SENIPIVITTEPTDDTTVPESEDL

FIG. 1A

mouse CAP-1

60
MLSHSAMVKQRKQQASAITKEIHGHDVDGMDLGKKVSIPRDIMIEELSHFSNRGARLFKM

120
RQRRSDKYTFENFQYESRAQINHNIAMQNGRVDGSNLEGGSQQGPSTPPNTPDPRSPPNP

180
ENIAPGYSGPLKEIPPERFNTTAVPKYYRSPWEQAIGSDPELLEALYPKLFKPEGKAELR

240
DYRSFNRVATPFGGFEKASKMVKFKVPDFELLLLTDPRFLAFANPLSGRRCFNRAPKGWV

SENIPVVITTEPTEDATVPESDDL

FIG. 1B

human CAP-2

60
MPLSGTPAPNKKRKSSKLIMELTGGGQESSGLNLGKKISVPRDVMLEELSLLTNRGSKMF

120
KLRQMRVEKFIYENHPDVFSDSSMDHFQKFLPTVGGQLGTAGQGFSYSKSNGRGGSQAGG

180
SGSAGQYGSDQQHHLGSGSGAGGTGGPAGQAGRGGAAGTAGVGETGSGDQAGGEGKHITV

240
FKTYISPWERAMGVDPQQKMELGIDLLAYGAKAELPKYKSFNRTAMPYGGYEKASKRMTF

QMPKFDLGPLLSEPLVLYNQNLSNRPSFNRTPIPWLSSGEPVDYNVDIGIPLDGETEEL

FIG. 1C

mouse CAP-2

60
MPLSGTPAPNKRRKSSKLIMELTGGGRESSGLNLGKKISVPRDVMLEELSLLTNRGSKMF

120
KLRQMRVEKFIYENHPDVFSDSSMDHFQKFLPTVGGQLETAGQGFSYGKGSSGGQAGSSG

180
SAGQYGSDRHQQGSGFGAGGSGGPGGQAGGGAPGTVGLGEPGSGDQAGGDGKHVTVFKT

240
YISPWDRAMGVDPQQKVELGIDLLAYGAKAELPKYKSFNRTAMPYGGYEKASKRMTFQMP

KFDLGPLLSEPLVLYNQNLSNRPSFNRTPIPWLSSGEHVDYNVDVGIPLDGETEEL

FIG. 1D

```
mCAP-1      M L S H S A M V K Q R K Q Q A S A I T K E I H G H D V D G M D L G K K V S I
mCAP-2  M P L S G T P A P N K R R K S S K L I M E L T G G G R E S S G L N L G K K I S V

mCAP-1  P R D I N I E L H S H F S N R G A R L A K M R Q R R S D K Y T F E H F - - - - -
mCAP-2  P R D V K L E L L S L L T N R G S K M Y K L R Q M R V E K F I Y E H H P D V F S

mCAP-1  - - - - - - - - - - - - - - - - Q Y E S R A Q I N H N I A M Q N G R V D G S N L
mCAP-2  D S S M D H F Q K F L P T V G G Q L E T A G Q G F S Y G K G S S G G Q A G S S G

mCAP-1  E G G S - - - - - - Q Q G P S T P P N T P D P R S P P N P E N I A P Q Y S G P L
mCAP-2  S A G Q Y G S D R H Q Q G S G F G A G G S G G P G G Q A G G G G A P G T V G L G

mCAP-1  K E I P P E R F N T - - - - T A V P K Y V R S P H E Q A I G S D P E L L E A L Y
mCAP-2  E P G S G D Q A G G D G K H V T V F K T V I S P W D R A M G V D P Q Q K V E L G

mCAP-1  P K Y F K P E G K A E L R D Y R S T H R V A T F F G G F E K A S K M V K F K V P
mCAP-2  I D I L A Y G A K A V L P K Y K S V N R T A M F Y G G Y E K A S K R M T F Q M P

mCAP-1  D F E L L L L T D P R F L A F A N P L S G R R C F N R A P K G W V S E N I P V V
mCAP-2  K F D L G P L L S E P L V L Y N Q N L S N R P S F N R T P I P W L S S G E H V D

mCAP-1  I T T E P T E D A T V P H S D D L
mCAP-2  Y N V D - V G I P L D G F T E E L
```

FIG. 1E

human CAP-1

```
        10        20        30        40        50        60        70        80        90       100
GTCCCAGGTTCAAGGATAAAAACCATCAGGCCCAAGTGCCATCCATAGTCCATCTCCAGAGTCTTCCTCCACAAACTGGGATTCATCCCCGCTGAAAAAG
CAGGGTCCAAGTTCCTATTTTTGGTAGTCCGGGTTCACGGTAGGTATCAGGTAGAGGTCTCAGAAGGAGGTGTTTGACCCTAAGTAGGGGCGACTTTTTC

       110       120       130       140       150       160       170       180       190       200
CACAATCTAACAGCAAGGGAACAAAAAAACCATGCTATCACATAATACTATGATGAAGCAGAGAAAACAGCAAGCAACAGCCATCATGAAGGAAGTCCAT
GTGTTAGATTGTCGTTCCCTTGTTTTTTTGGTACGATAGTGTATTATGATACTACTTCGTCTCTTTTGTCGTTCGTTGTCGGTAGTACTTCCTTCAGGTA

       210       220       230       240       250       260       270       280       290       300
GGAAATGATGTTGATGGCATGGACCTGGGCAAAAAGGTCAGCATCCCCAGAGACATCATGTTGGAAGAATTATCCCATCTCAGTAACCGTGGTGCCAGGC
CCTTTACTACAACTACCGTACCTGGACCCGTTTTTCCAGTCGTAGGGGTCTCTGTAGTACAACCTTCTTAATAGGGTAGAGTCATTGGCACCACGGTCCG

       310       320       330       340       350       360       370       380       390       400
TATTTAAGATGCGTCAAAGAAGATCTGACAAATACACATTTGAAAATTTCCAGTATCAATCTAGAGCACAAATAAATCACAGTATTGCTATGCAGAATGG
ATAAATTCTACGCAGTTTCTTCTAGACTGTTTATGTGTAAACTTTTAAAGGTCATAGTTAGATCTCGTGTTTATTTAGTGTCATAACGATACGTCTTACC

       410       420       430       440       450       460       470       480       490       500
GAAAGTGGATGGAAGTAACTTGGAAGGTGGTTCGCAGCAAGCCCCCTTGACTCCTCCCAACACCCCAGATCCACGAAGCCCTCCAAATCCAGACAACATT
CTTTCACCTACCTTCATTGAACCTTCCACCAAGCGTCGTTCGGGGGAACTGAGGAGGGTTGTGGGGTCTAGGTGCTTCGGGAGGTTTAGGTCTGTTGTAA

       510       520       530       540       550       560       570       580       590       600
GCTCCAGGATATTCTGGACCACTGAAGGAAATTCCTCCTGAAAAATTCAACACCACAGCTGTCCCTAAGTACTATCAATCTCCCTGGGAGCAAGCCATTA
CGAGGTCCTATAAGACCTGGTGACTTCCTTTAAGGAGGACTTTTTAAGTTGTGGTGTCGACAGGGATTCATGATAGTTAGAGGGACCCTCGTTCGGTAAT

       610       620       630       640       650       660       670       680       690       700
GCAATGATCCGGAGCTTTTAGAGGCTTTATATCCTAAACTTTTCAAGCCTGAAGGAAAGGCAGAACTGCCTGATTACAGGAGCTTTAACAGGGTTGCCAC
CGTTACTAGGCCTCGAAAATCTCCGAAATATAGGATTTGAAAAGTTCGGACTTCCTTTCCGTCTTGACGGACTAATGTCCTCGAAATTGTCCCAACGGTG

       710       720       730       740       750       760       770       780       790       800
ACCATTTGGAGGTTTTGAAAAAGCATCAAGAATGGTTAAATTTAAAGTTCCAGATTTTGAGCTACTATTGCTAACAGATCCCAGGTTTATGTCCTTTGTC
TGGTAAACCTCCAAAACTTTTTCGTAGTTCTTACCAATTTAAATTTCAAGGTCTAAAACTCGATGATAACGATTGTCTAGGGTCCAAATACAGGAAACAG

       810       820       830       840       850       860       870       880       890       900
AATCCCCTTTCTGGCAGACGGTCCTTTAATAGGACTCCTAAGGGATGGATATCTGAGAATATTCCTATAGTGATAACAACCGAACCTACAGATGATACCA
TTAGGGGAAAGACCGTCTGCCAGGAAATTATCCTGAGGATTCCCTACCTATAGACTCTTATAAGGATATCACTATTGTTGGCTTGGATGTCTACTATGGT

       910       920       930       940       950       960       970       980       990      1000
CTGTACCAGAATCAGAAGACCTATGAAAAGAAAGTTGTATGTGCCACATAAAACTCTGAATATAAAAGTTGCTGTTCTACTATTTTAACTACTGGCAAAG
GACATGGTCTTAGTCTTCTGGATACTTTTCTTTCAACATACACGGTGTATTTTGAGACTTATATTTTCAACGACAAGATGATAAAATTGATGACCGTTTC

      1010      1020      1030      1040      1050      1060      1070      1080      1090      1100
CACTTGCATTTTTCATTAGTAGCAACAATAGCAATTTAGTGATTTTCCTTTTCTGACATTCAATTTCAATCTCAGATCAAATACTAATAAACAATTAGAA
GTGAACGTAAAAAGTAATCATCGTTGTTATCGTTAAATCACTAAAAGGAAAAGACTGTAAGTTAAAGTTAGAGTCTAGTTTATGATTATTTGTTAATCTT

      1110      1120      1130      1140      1150      1160      1170      1180      1190      1200
ATCTTACTTTAAAAAACTTATAACTCACTTGTCTTCATTCATAATTTTGTTTTCACCTGGTTTAAAGAATCCAGATATTTTACTGCAAAAGTTCAGATGG
TAGAATGAAATTTTTTGAATATTGAGTGAACAGAAGTAAGTATTAAAACAAAAGTGGACCAAATTTCTTAGGTCTATAAAATGACGTTTTCAAGTCTACC

      1210      1220      1230      1240      1250      1260      1270      1280      1290      1300
AAAAGTAATTGACAGCTTCACCTTTGTCTCATTTTATATGATTTATTACAGTGTAAGTTTTTCAAGTGGAATCTAGAATCAAAATACAGGGAGAGATATG
TTTTCATTAACTGTCGAAGTGGAAACAGAGTAAAATATACTAAATAATGTCACATTCAAAAAGTTCACCTTAGATCTTAGTTTTATGTCCCTCTCTATAC

      1310      1320      1330      1340      1350      1360      1370      1380      1390      1400
AAGACCTATTCAGAGTTTCATCTGGGGATGAAAGCTATGGAAGATGATGTACAAATGTTATTGATGGAGAAAATGGTTGGTGTGTCCTTTCTGGTGACCA
TTCTGGATAAGTCTCAAAGTAGACCCCTACTTTCGATACCTTCTACTACATGTTTACAATAACTACCTCTTTTACCAACCACACAGGAAAGACCACTGGT

      1410      1420      1430      1440      1450      1460      1470      1480      1490      1500
TGAGAAAATAATATGTCTTGATGAAGTCTTTTCATTAGTCACTCTTAGAATTCTAAAGTGCTTTGCACTTTTCAATATGTTTTGAATCATTAGGTAATTT
ACTCTTTTATTATACAGAACTACTTCAGAAAAGTAATCAGTGAGAATCTTAAGATTTCACGAAACGTGAAAAGTTATACAAAACTTAGTAATCCATTAAA

      1510      1520      1530      1540      1550      1560      1570      1580      1590      1600
ATTCTGGATGATATTCTCCAAAATTCAATTCAGTTATTATATTCATTTAGCATTAAGTCAAGGAGACTGAGAATGACTCAAGGGACGTCATAGTACCATA
TAAGACCTACTATAAGAGGTTTTAAGTTAAGTCAATAATATAAGTAAATCGTAATTCAGTTCCTCTGACTCTTACTGAGTTCCCTGCAGTATCATGGTAT

      1610      1620      1630      1640      1650      1660      1670      1680      1690      1700
GTTTTAAGGACCAAGGTGTGCCCAGAATTCAAGTTTCACAAATCCCAATGCTGTGCATTGATTATGTTCAACTTTATGTGTGCATTCTTAGAAGAGTAAG
CAAAATTCCTGGTTCCACACGGGTCTTAAGTTCAAAGTGTTTAGGGTTACGACACGTAACTAATACAAGTTGAAATACACACGTAAGAATCTTCTCATTC

      1710      1720      1730      1740      1750      1760      1770      1780      1790      1800
AACAAATAAAGTACACCGTAATATACATATAAATACATTCATGTTTGTGAGAGAAGGAAAGAGTAAGTAATTTGAATTGGCAGCTTTCTTTGCTAAATCT
TTGTTTATTTCATGTGGCATTATATGTATATTTATGTAAGTACAAACACTCTCTTCCTTTCTCATTCATTAAACTTAACCGTCGAAAGAAACGATTTAGA

      1810      1820      1830      1840      1850      1860      1870      1880      1890      1900
TTAAATTCTGTTAAGATCCTCAAGTAACTGGGGAGTACATGCTTTAGGACACAAACAAAAACAAAGGGCATGAAAGTATCTGAAAGCAATGTAGCACATA
AATTTAAGACAATTCTAGGAGTTCATTGACCCCTCATGTACGAAATCCTGTGTTTGTTTTTGTTTCCCGTACTTTCATAGACTTTCGTTACATCGTGTAT

      1910      1920      1930      1940      1950      1960      1970      1980      1990      2000
TCTATCGTAATATATGTAATATATTGACATAAAAGACACAAACTAATATAAAGTTATAGTTATATCTTAAAATATAATTGAAGAAGCATATGACATATAA
AGATAGCATTATATACATTATATAACTGTATTTTCTGTGTTTGATTATATTTCAATATCAATATAGAATTTTATATTAACTTCTTCGTATACTGTATATT

      2010      2020      2030      2040      2050      2060      2070      2080      2090      2100
CTTATAGAAATCAGTATCAATTCCTCCCATTTCAATTCAGTTAAGACTTCTGTGATAGATGTTTATAGCAGAGAAGAAATGTCTCATCAATAGGAAAACT
GAATATCTTTAGTCATAGTTAAGGAGGGTAAAGTTAAGTCAATTCTGAAGACACTATCTACAAATATCGTCTCTTCTTTACAGAGTAGTTATCCTTTTGA

      2110      2120      2130      2140      2150      2160      2170      2180      2190      2200
ATCAGATAAAGTTTAGGAGATAGGAAGAAGGACTGTGTGTAGTAATGAAAATACCAAGTTGCAACATTACATGTTTACAAAAAAAATCTGTGTTTGTAGT
TAGTCTATTTCAAATCCTCTATCCTTCTTCCTGACACACATCATTACTTTTATGGTTCAACGTTGTAATGTACAAATGTTTTTTTTAGACACAAACATCA

      2210      2220      2230      2240      2250      2260      2270      2280      2290      2300
GTGGAAGTTGGTGACTGTTTTAATCATCATCTAGACTTGTTAAGTAGAAAAATTTTAAAAATTTGCTTATGAAAATATAACCCCCAGAAAGTAACAATGA
CACCTTCAACCACTGACAAAATTAGTAGTAGATCTGAACAATTCATCTTTTTAAAATTTTTAAACGAATACTTTTATATTGGGGGTCTTTCATTGTTACT

      2310      2320      2330      2340      2350      2360      2370      2380      2390      2400
CAAAGTATTATATTTATATATATTATTGTAGAGAATTTGTATATTTTTAAAGATGTCTTAAGATATCTTAATTTTATTTATAAGTTTTGGTGTTTACCTG
GTTTCATAATATAAATATATATAATAACATCTCTTAAACATATAAAAATTTCTACAGAATTCTATAGAATTAAAATAAATATTCAAAACCACAAATGGAC

      2410      2420      2430      2440      2450      2460      2470      2480      2490      2500
TTTTAAAATGATAATGTTGGCATCTGTGATAAACTATCAATGAGGCTCCCATCATGCCATTTTTTGTTCATTTTAATCTTTAAAAAATAAAAATTAGGCA
AAAATTTTACTATTACAACCGTAGACACTATTTGATAGTTACTCCGAGGGTAGTACGGTAAAAAACAAGTAAAATTAGAAATTTTTTATTTTTAATCCGT

      2510      2520      2530
TATTAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
ATAATTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT
```

FIG. 2A

mouse CAP-1

```
        10        20        30        40        50        60        70        80        90       100
ATTCGGCACATGGGATCGAGGGACCATGCCGTTCCAGGTTCAAGGATAAAACCCATTGGGCCATAGTGCCGTCATATTCCACCTTCAGTGCCTTCCTCCA
TAAGCCGTGTACCCTAGCTCCCTGGTACGGCAAGGTCCAAGTTCCTATTTTGGGTAACCCGGTATCACGGCAGTATAAGGTGGAAGTCACGGAAGGAGGT

       110       120       130       140       150       160       170       180       190       200
CAATTGGGATTCACCCCTGCTGAAAAGCGCACGCTGACAGCAAGGGAACAAAAAACTATGCTATCACATAGTGCCATGGTGAAGCAAAGGAAACAGCAAG
GTTAACCCTAAGTGGGGACGACTTTTCGCGTGCGACTGTCGTTCCCTTGTTTTTTGATACGATAGTGTATCACGGTACCACTTCGTTTCCTTTGTCGTTC

       210       220       230       240       250       260       270       280       290       300
CATCAGCCATCACGAAGGAAATCCATGGACATGATGTTGACGGCATGGACCTGGGCAAAAAAGTTAGCATCCCCAGAGACATCATGATAGAAGAATTGTC
GTAGTCGGTAGTGCTTCCTTTAGGTACCTGTACTACAACTGCCGTACCTGGACCCGTTTTTTCAATCGTAGGGGTCTCTGTAGTACTATCTTCTTAACAG

       310       320       330       340       350       360       370       380       390       400
CCATTTCAGTAATCGTGGGGCCAGGCTGTTTAAGATGCGTCAAAGAAGATCTGACAAATACACCTTTGAAAATTTCCAGTATGAATCTAGAGCACAAATT
GGTAAAGTCATTAGCACCCCGGTCCGACAAATTCTACGCAGTTTCTTCTAGACTGTTTATGTGGAAACTTTTAAAGGTCATACTTAGATCTCGTGTTTAA

       410       420       430       440       450       460       470       480       490       500
AATCACAATATCGCCATGCAGAATGGGAGAGTTGATGGAAGCAACCTGGAAGGTGGCTCACAGCAAGGCCCCTCAACTCCGCCCAACACCCCCGATCCAC
TTAGTGTTATAGCGGTACGTCTTACCCTCTCAACTACCTTCGTTGGACCTTCCACCGAGTGTCGTTCCGGGGAGTTGAGGCGGGTTGTGGGGGCTAGGTG

       510       520       530       540       550       560       570       580       590       600
GAAGCCCCCCAAATCCAGAGAACATCGCACCAGGATATTCTGGACCACTGAAGGAAATTCCTCCTGAAAGGTTTAACACGACGGCCGTTCCTAAGTACTA
CTTCGGGGGGTTTAGGTCTCTTGTAGCGTGGTCCTATAAGACCTGGTGACTTCCTTTAAGGAGGACTTTCCAAATTGTGCTGCCGGCAAGGATTCATGAT

       610       620       630       640       650       660       670       680       690       700
CCGGTCTCCATGGGAGCAGGCGATTGGCAGCGATCCGGAGCTCCTGGAGGCTTTGTACCCAAAACTTTTCAAGCCTGAAGGAAAAGCAGAACTGCGGGAT
GGCCAGAGGTACCCTCGTCCGCTAACCGTCGCTAGGCCTCGAGGACCTCCGAAACATGGGTTTTGAAAAGTTCGGACTTCCTTTTCGTCTTGACGCCCTA

       710       720       730       740       750       760       770       780       790       800
TACAGGAGCTTTAACAGGGTTGCCACTCCATTTGGAGGTTTTGAAAAAGCATCAAAAATGGTCAAATTCAAAGTTCCAGATTTTGAACTACTGCTGCTGA
ATGTCCTCGAAATTGTCCCAACGGTGAGGTAAACCTCCAAAACTTTTTCGTAGTTTTTACCAGTTTAAGTTTCAAGGTCTAAAACTTGATGACGACGACT

       810       820       830       840       850       860       870       880       890       900
CAGATCCCAGGTTCTTGGCCTTTGCCAATCCTCTTTCGGGCAGACGATGCTTTAACAGGGCGCCAAAGGGGTGGGTATCTGAGAATATCCCCGTCGTGAT
GTCTAGGGTCCAAGAACCGGAAACGGTTAGGAGAAAGCCCGTCTGCTACGAAATTGTCCCGCGGTTTCCCCACCCATAGACTCTTATAGGGGCAGCACTA

       910       920       930       940       950       960       970       980
CACAACTGAGCCTACAGAAGACGCCACTGTACCGGAATCAGATGACCTGTGAGAGGGAAGCTGGGGATGCCACAGGAAGTTC
GTGTTGACTCGGATGTCTTCTGCGGTGACATGGCCTTAGTCTACTGGACACTCTCCCTTCGACCCCTACGGTGTCCTTCAAG
```

FIG. 2B

human CAP-2

CGGTCACAGC AGCTCAGTCC TCCAAAGCTG CTGGACCCCA GGGAGAGCTG ACCACTGCCC GAGCAGCCGG CTGAATCCAC CTCCACAATG CCGCTCTCAG 100
GAACCCCGGC CCCTAATAAG AAGAGGAAAT CCAGCAAGCT GATCATGGAA CTCACTGGAG GTGGACAGGA GAGCTCAGGC TTGAACCTGG GCAAAAAGAT 200
CAGTGTCCCA AGGGATGTGA TGTTGGAGGA ACTGTCGCTG CTTACCAACC GGGGCTCCAA GATGTTCAAA CTGCGGCAGA TGAGGGTGGA GAAGTTTATT 300
TATGAGAACC ACCCTGATGT TTTCTCTGAC AGCTCAATGG ATCACTTCCA GAAGTTCCTT CCAACAGTGG GGGGACAGCT GGGCACAGCT GGTCAGGGAT 400
TCTCATACAG CAAGAGCAAC GGCAGAGGCG GCAGCCAGGC AGGGGGCAGT GGCTCTGCCG GACAGTATGG CTCTGATCAG CAGCACCATC TGGGCTCTGG 500
GTCTGGAGCT GGGGGTACAG GTGGTCCCGC GGGCCAGGCT GGCAGAGGAG GAGCTGCTGG CACACAGGGG GTTGGTGAGA CAGGATCAGG AGACCAGGCA 600
GGCGGAGAAG GAAAACATAT CACTGTGTTC AAGACCTATA TTTCCCCATG GGAGCGAGCC ATGGGGGTTG ACCCCCAGCA AAAAATGGAA CTTGGCATTG 700
ACCTGCTGGC CTATGGGGCC AAAGCTGAAC TTCCCAAATA TAAGTCCTTC AACAGGACGG CAATGCCCTA TGGTGGATAT GAGAAGGCCT CCAAACGCAT 800
GACCTTCCAG ATGCCCAAGT TTGACCTGGG GCCCTTGCTG AGTGAACCCC TGGTCCTCTA CAACCAAAAC CTCTCCAACA GGCCTTCTTT CAATCGAACC 900
CCTATTCCCT GGCTGAGCTC TGGGGAGCCT GTAGACTACA ACGTGGATAT TGGCATCCCC TTGGATGGAG AAACAGAGGA GCTGTGAGGT GTTTCCTCCT 1000
CTGATTTGCA TCATTTCCCC TCTCTGGCTC CAATTTGGAG A

FIG. 2C

mouse CAP-2

```
                                                                                                          100
GCCGGGGAGA GCCGACCACC AACTGAGCAG CTGGTCAGAT CCACCTCCAC CATGCCACGC TCAGGAACCC CGGCCCCTAA CAAGAGGAGG AAGTCAAGCA
                                                                                                          200
AACTGATTAT GGAGCTCACT GGAGGTGGCC GGGAGAGCTC AGGCCTGAAC CTGGGCAAGA AGATCAGTGT CCCAAGGGAT GTGATGTTGG AGGAGCTGTC
                                                                                                          300
CCTTCTTACC AACCGAGGCT CCAAGATGTT CAAGCTACGG CAGATGCGGG TGGAGAAATT TATCTATGAG AATCACCCCG ATGTTTTCTC TGACAGCTCA
                                                                                                          400
ATGGATCACT TCCAGAAGTT TCTTCCCACA GTGGGAGGAC AGCTGGAGAC AGCTGGTCAG GGCTTCTCAT ATGGCAAGGG CAGCAGTGGA GGCCAGGCTG
                                                                                                          500
GCAGCAGTGG CTCTGCTGGA CAGTATGGCT CTGACCGTCA TCAGCAGGGC TCTGGGTTTG GAGCTGGGGG TTCAGGTGGT CCTGGGGGCC AGGCTGGTGG
                                                                                                          600
AGGAGGAGCT CCTGGCACAG TAGGGCTTGG AGAGCCCGGA TCAGGTGACC AGGCAGGTGG AGATGGAAAA CATGTCACTG TGTTCAAGAC TTATATTTCC
                                                                                                          700
CCATGGGATC GGGCCATGGG GGTTGATCCT CAGCAAAAAG TGGAACTTGG CATTGACCTA CTGGCATACG GTGCCAAAGC TGAACTCCCC AAATATAAGT
                                                                                                          800
CCTTCAACAG GACAGCAATG CCCTACGGTG GATATGAGAA GGCCTCCAAA CGCATGACCT TCCAGATGCC CAAGTTTGAC CTGGGGCCTC TGCTGAGTGA
                                                                                                          900
ACCCCTGGTC CTCTACAACC AGAACCTCTC CAACAGGCCT TCTTTCAATC GAACCCCTAT TCCCTGGTTG AGCTCTGGGG AGCATGTAGA CTACAACGTG
                                                                                                         1000
GATGTTGGTA TCCCCTTGGA TGGAGAGACA GAGGAGCTGT GAAGTGCCTC CTCCTGTCAT GTGCATCATT TCCCTTCTCT GGTTCCAATT TGAGAGTGGA
                                                                                                         1100
TGCTGGACAG GATGCCCCAA CTGTTAATCC AGTATTCTTG TGGCAATGGA GGGTAAAGGG TGGGGTCCGT TGCCTTTCCA CCCTTCAAGT TCCTGCTCCG
AAGCATCCCT CCTCACCAGC TCAGAGCTCC CATCCTGCTG TACCATATGG AATCTGCTCT TTTATGGAAT TTTCT
```

FIG. 2D

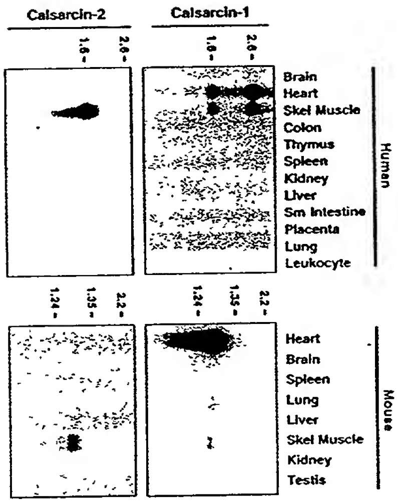

Calsarcin-2
Calsarcin-1
1.6 -
2.6 -
1.6 -
2.6 -
Brain
Heart
Skel Muscle
Colon
Thymus
Spleen
Kidney
Liver
Sm Intestine
Placenta
Lung
Leukocyte
Human
1.24 -
1.35 -
2.2 -
1.24 -
1.35 -
2.2 -
Heart
Brain
Spleen
Lung
Liver
Skel Muscle
Kidney
Testis
Mouse

FIG. 3

FIG. 4A

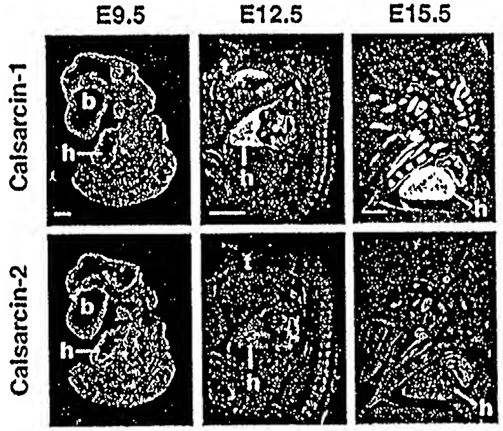


FIG. 4C

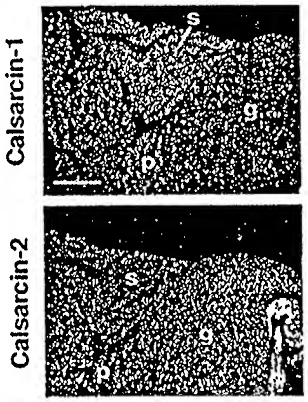


FIG. 4B

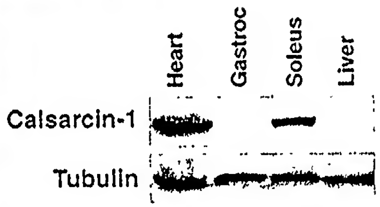


FIG. 4D

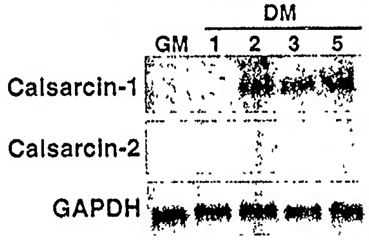


FIG. 4E

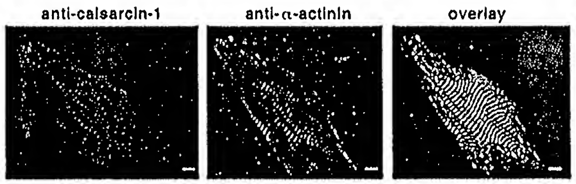

anti-calsarcin-1
anti-α-actinin
overlay

FIG. 5A

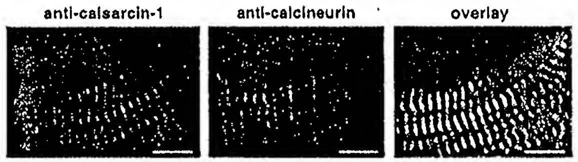

anti-calsarcin-1
anti-calcineurin
overlay

FIG. 5B

FIG. 6A

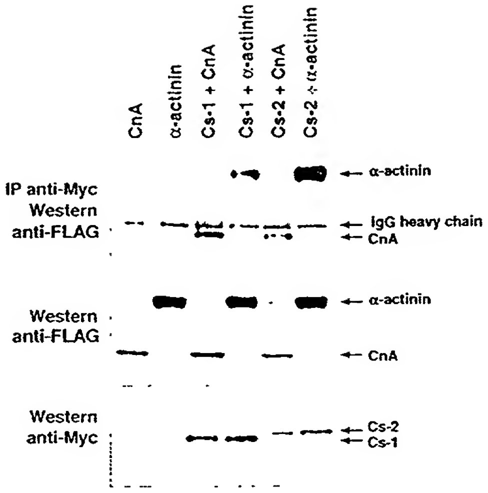


FIG. 6B

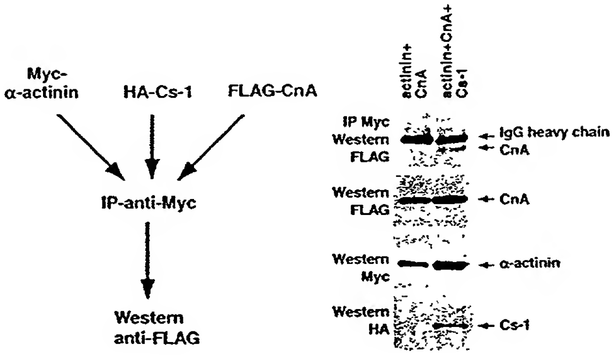
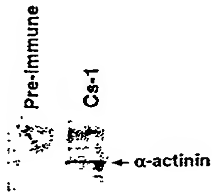


FIG. 6C



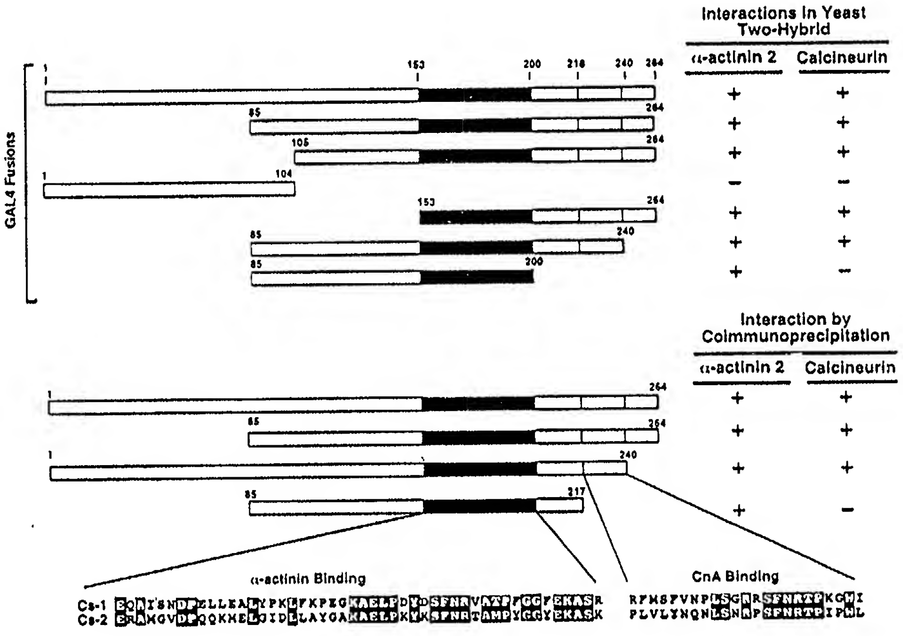

GAL4 Fusions
1
153
200
218
240
264
85
105
104
Interactions in Yeast Two-Hybrid
α-actinin 2
Calcineurin
+ +
+ +
+ +
− −
+ +
+ +
+ −
Interaction by Coimmunoprecipitation
α-actinin 2
Calcineurin
+ +
+ +
+ +
+ −
217
α-actinin Binding
Cs-1 EQAISNDPELLEALYPKLFKPEGKAELPDYDSFNRVATPFGGFEKASR
Cs-2 ERAMGVDPQQKMELGIDLLAYGAKAELPKYKSFNRTAMPYGGYEKASK
CnA Binding
RFMSFVNPLSGRRSFNRTPKGHI
PLVLYNQNLSNRPSFNRTPIPWL

FIG. 7

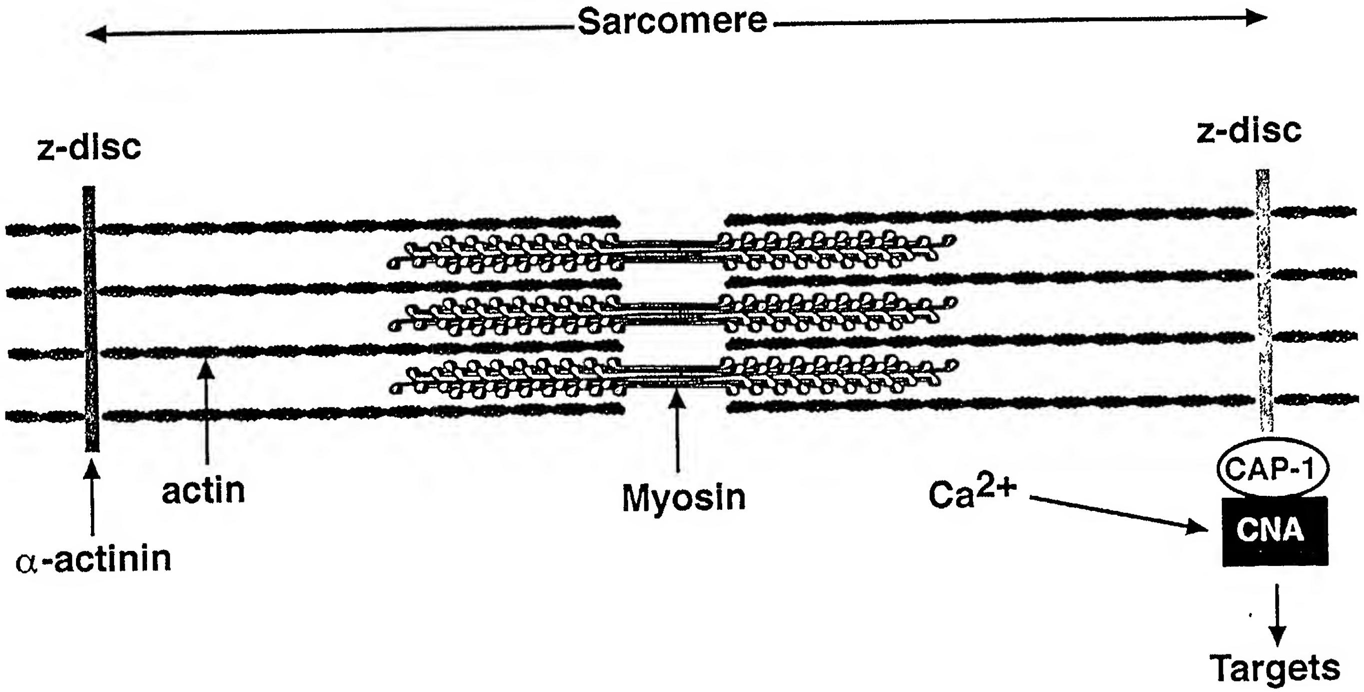

Sarcomere
z-disc
z-disc
actin
Myosin
α-actinin
CAP-1
Ca^{2+}
CNA
Targets

FIG. 8

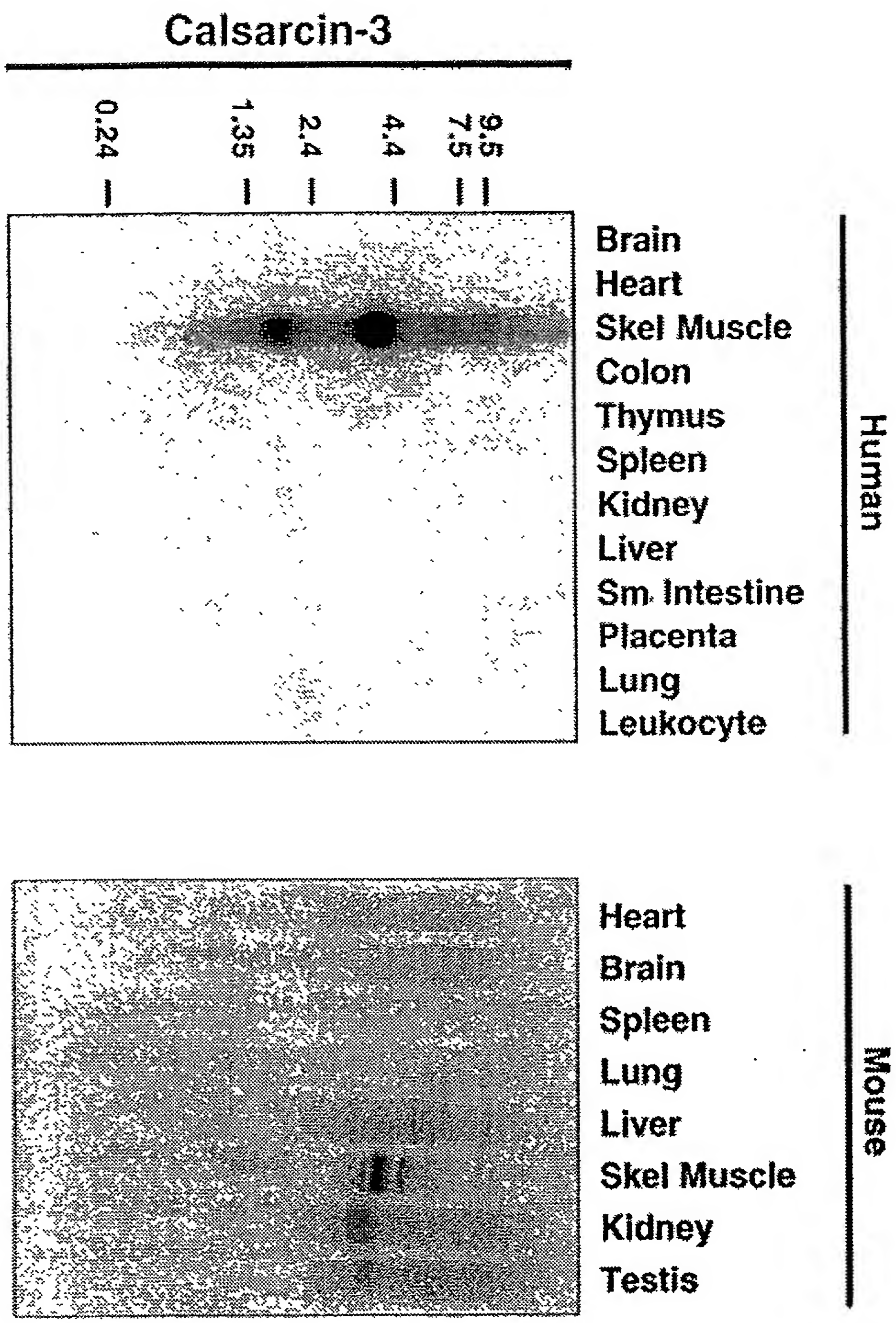

Calsarcin-3
0.24
1.35
2.4
4.4
7.5
9.5
Brain
Heart
Skel Muscle
Colon
Thymus
Spleen
Kidney
Liver
Sm. Intestine
Placenta
Lung
Leukocyte
Human
Heart
Brain
Spleen
Lung
Liver
Skel Muscle
Kidney
Testis
Mouse

FIG. 9

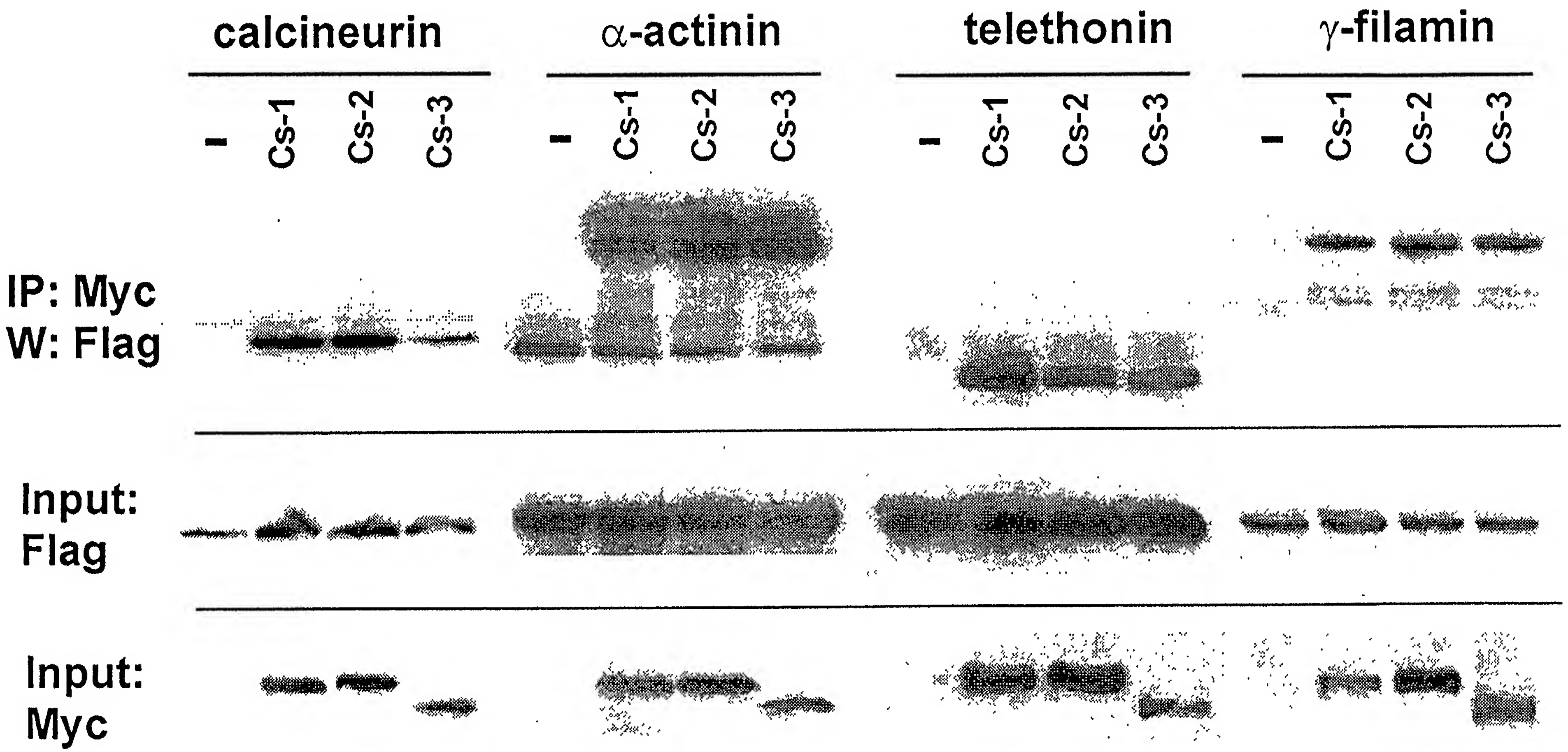

calcineurin
α-actinin
telethonin
γ-filamin
-
Cs-1
Cs-2
Cs-3
IP: Myc
W: Flag
Input:
Flag
Input:
Myc

FIG. 10

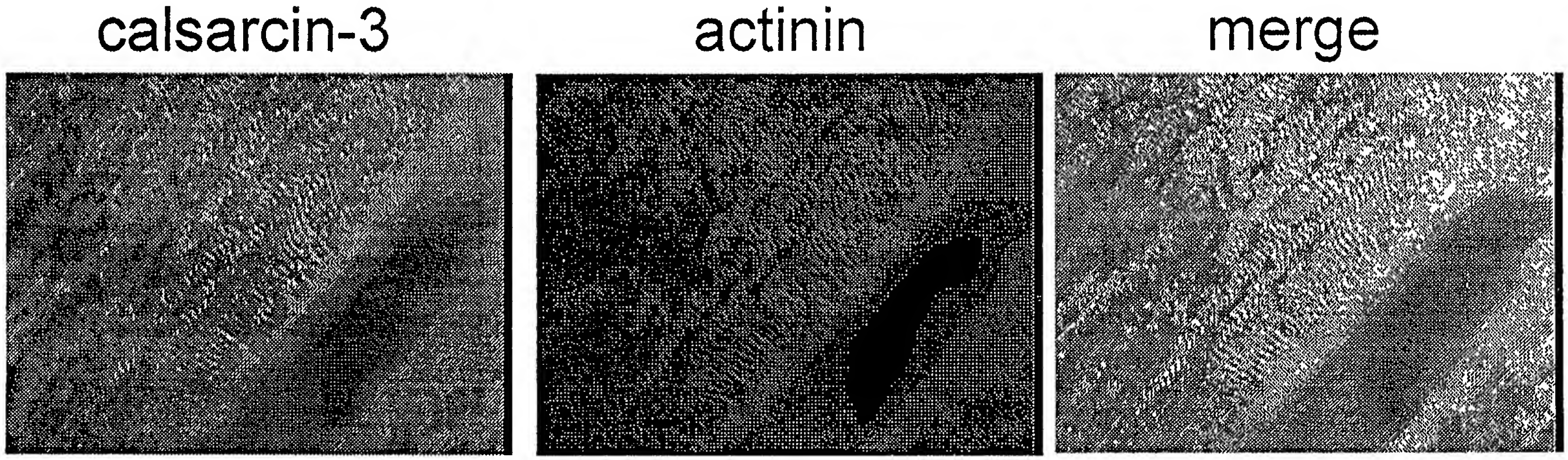
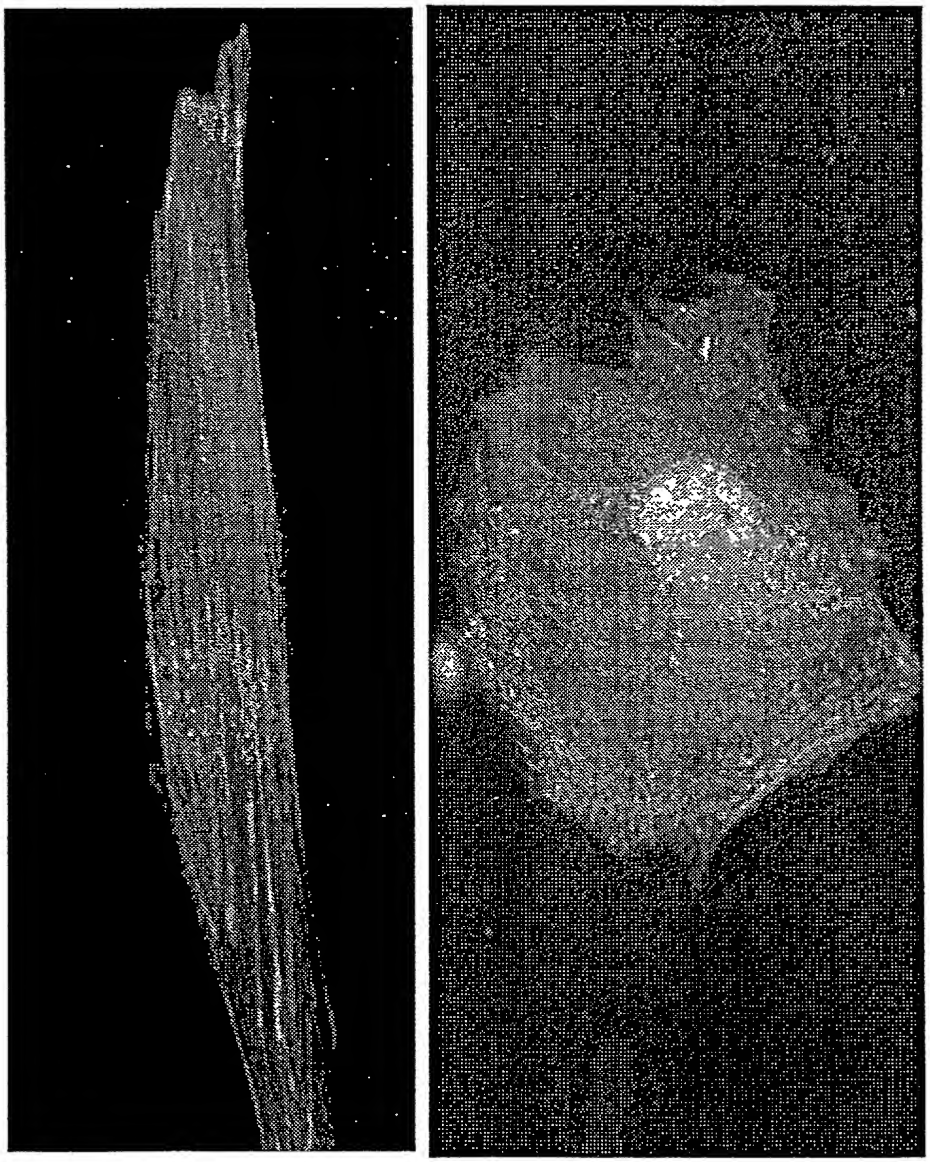
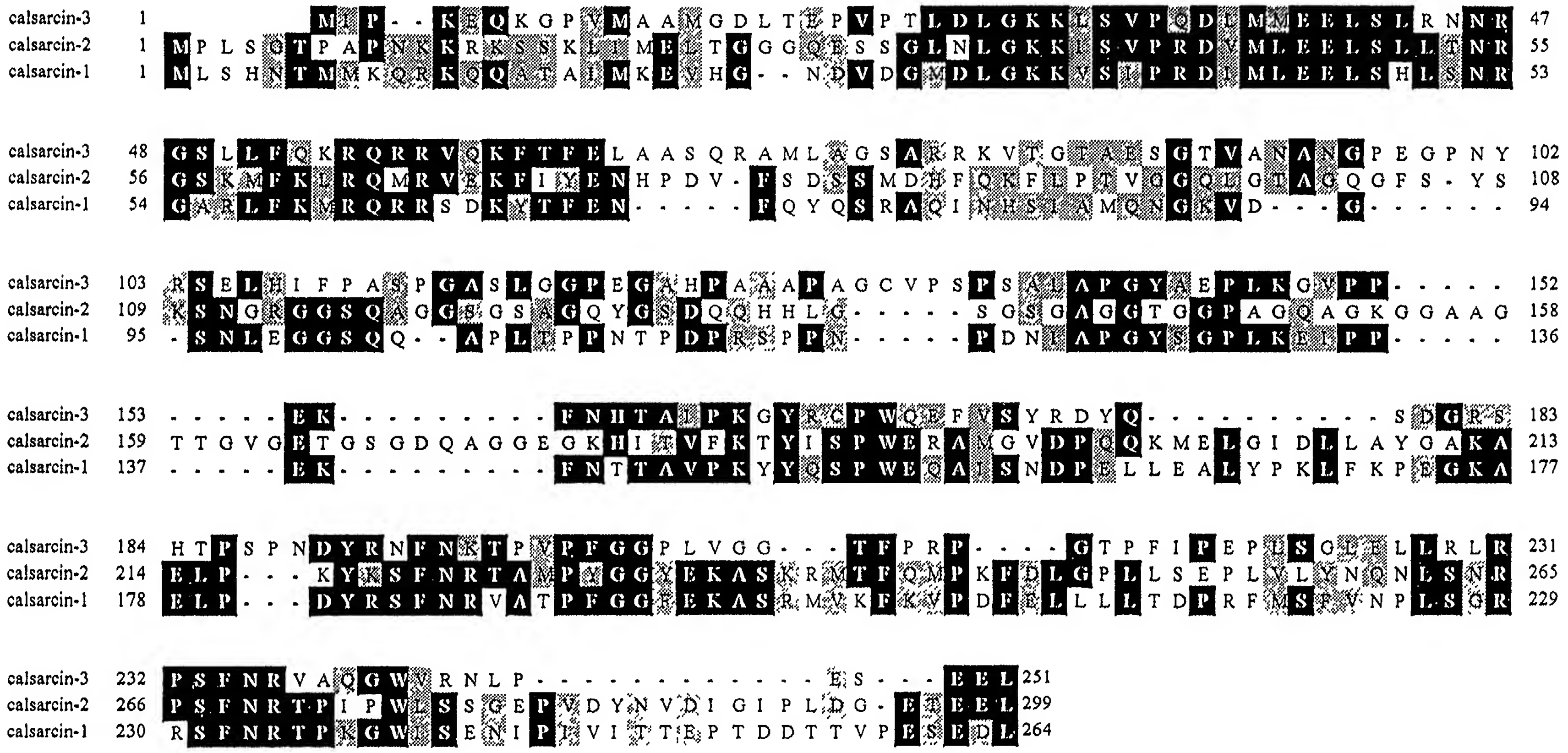


FIG. 11

FIG. 12



ClustalW Formatted Alignments



```
calsarcin-3    1              M I P - - K E Q K G P V M A A M G D L T E P V P T L D L G K K L S V P Q D L M M E E L S L R N N R  47
calsarcin-2    1  M P L S Q T P A P N K K R K S S K L I M E L T G G G Q E S S G L N L G K K I S V P R D V M L E E L S L L T N R  55
calsarcin-1    1  M L S H N T M M K Q R K Q Q A T A I M K E V H G - - N D V D G M D L G K K V S I P R D I M L E E L S H L S N R  53

calsarcin-3   48  G S L L F Q K R Q R R V Q K F T F E L A A S Q R A M L A G S A R R K V T G T A E S G T V A N A N G P E G P N Y  102
calsarcin-2   56  G S K M F K L R Q M R V E K F I Y E N H P D V - F S D S S M D H F Q K F L P T V Q G Q L G T A G Q G F S - Y S  108
calsarcin-1   54  G A R L F K M R Q R R S D K Y T F E N - - - - - F Q Y Q S R A Q I N H S I A M Q N G K V D - - - G - - - - - -  94

calsarcin-3  103  R S E L H I F P A S P G A S L G G P E G A H P A A A P A G C V P S P S A L A P G Y A E P L K G V P P - - - - -  152
calsarcin-2  109  K S N G R G G S Q A G G S G S A G Q Y G S D Q Q H H L G - - - - - S G S G A G G T G G P A G Q A G K G G A A G  158
calsarcin-1   95  - S N L E G G S Q Q - - A P L T P P N T P D P R S P P N - - - - - P D N I A P G Y S G P L K E I P P - - - - -  136

calsarcin-3  153  - - - - - E K - - - - - - - - - F N H T A I P K G Y R C P W Q E F V S Y R D Y Q - - - - - - - - - - S D G R S  183
calsarcin-2  159  T T G V G E T G S G D Q A G G E G K H I T V F K T Y I S P W E R A M G V D P Q Q K M E L G I D L L A Y G A K A  213
calsarcin-1  137  - - - - - E K - - - - - - - - - F N T T A V P K Y Y Q S P W E Q A I S N D P E L L E A L Y P K L F K P E G K A  177

calsarcin-3  184  H T P S P N D Y R N F N K T P V P F G G P L V G G - - - T F P R P - - - - G T P F I P E P L S G L E L L R L R  231
calsarcin-2  214  E L P - - - K Y K S F N R T A M P Y G G Y E K A S K R M T F Q M P K F D L G P L L S E P L V L Y N Q N L S N R  265
calsarcin-1  178  E L P - - - D Y R S F N R V A T P F G G F E K A S R M V K F K V P D F E L L L L T D P R F M S F V N P L S G R  229

calsarcin-3  232  P S F N R V A Q G W V R N L P - - - - - - - - - - - - E S - - - E E L  251
calsarcin-2  266  P S F N R T P I P W L S S G E P V D Y N V D I G I P L D G - E T E E L  299
calsarcin-1  230  R S F N R T P K G W I S E N I P I V I T T E P T D D T T V P E S E D L  264
```

FIG. 13